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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ZHU, WEIPING

ART UNIT

PAPER NUMBER

1734

NOTIFICATION DATE

DELIVERY MODE

02/03/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/544,206	Applicant(s) MOULIN, ANTOINE	
	Examiner WEIPING ZHU	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 24, 2010 has been entered.

Status of Claims

2. Claims 1 and 3-12 are currently under examination wherein claim 1 has been amended in applicant's amendment filed on November 24, 2010. Claim 2 has been cancelled in the same amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakaoka et al. (US 4,336,080) in view of Chatfield et al. (US 4,159,218).

With respect to claims 1 and 3-12, Nakaoka et al. ('080) discloses a method for producing a cold-rolled dual-phase steel sheet from a slab with a chemical composition

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comprising by weight: C: 0.02-0.06%; Mn: 0.05-0.30%; N: <0.005%; Al: 0.02-0.06%; P: 0.01-0.06%; Si: <0.20% (col. 5, line 49 – col. 7, line 10). The method comprises:

hot-rolling the steel slab heated to 1250° C to prepare a hot-rolled steel strip (col. 10, lines 34-39);

coiling the hot-rolled strip at a temperature within the range of 650° C to 770° C (abstract);

cold-rolling the strip with a reduction ratio of 75% (col. 10, lines 34-44);

continuous-annealing the strip by heating the strip to a temperature within the range of 750° C to 880° C and holding it there for a pre-determined time (i.e. soaking) as claimed in the instant claim 6 (abstract);

cooling the strip to 750° C by a gas jet followed by a rapid cooling by a water jet with a quenching rate of about 2000° C/sec as claimed in the instant claims 10 and 12 (col. 10, lines 50-53);

over-aging the strip at a temperature within the range of 260° C to 360° C (abstract).

Nakaoka et al. ('080) does not teach that the slab contains chromium as in the instant claim 1.

Chatfield et al. ('218) discloses a substantially identical method for producing a ferritic martensitic dual-phase steel strip containing 0.1-0.7 wt% of Cr (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add by weight 0.1-0.7% of chromium into the slab as disclosed by Chatfield et al. ('218) in the composition of Nakaoka et al. ('080) in order to increase

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hardenability at a cost factor significantly lower than that found in a steel having an increased manganese content as disclosed by Chatfield et al. ('218) (col. 2, lines 8-16).

Nakaoka et al. ('080) in view of Chatfield et al. ('218) does not specify the hot-rolling finishing temperatures as claimed in the instant claims 3 and 4. However the hot-rolling finishing temperature is a result-effective variable, because it would directly affect the coiling temperature which would in turn affect the Lankford value (r) of the steel sheet as disclosed by Nakaoka et al. ('080) (col. 7, lines 17-23). Therefore, it would have been obvious to one of ordinary skill in the art to optimize the hot-rolling finishing temperature of Nakaoka et al. ('080) in view of Chatfield et al. ('218) in order to achieve the desired properties. See MPEP 2144.05 II.

Nakaoka et al. ('080) in view of Chatfield et al. ('218) does not disclose the cooling rates as claimed in the instant claims 9 and 11. However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. In re Boesch, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the cooling rate after the continuous annealing is a result-effective variable, because it would directly affect the carbon content in ferrite and the microstructure of the steel as disclosed by Nakaoka et al. ('080) (col. 8, line 30 to col. 9, line 19). An ordinary skilled in the art would have optimized the cooling rate in the process of Nakaoka et al. ('080) in view of Chatfield et al. ('218) at the time the invention was made in order to achieve desired microstructure and properties of the dual-phase steel of Nakaoka et al. ('080) in view of Chatfield et al. ('218). See MPEP 2144.05 II.

The final strip of Nakaoka et al. ('080) in view of Chatfield et al. ('218) has a dual-phase structure of ferrite and a low-temperature transformation phase (abstract). The volume ratio of the low-temperature transformation phase is up to 10% of the structure as a whole (col. 9, lines 3-7). Nakaoka et al. ('080) in view of Chatfield et al. ('218) does not specify that the low-temperature transformation phase is martensite as claimed. However, it has been well held where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical process, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977), MPEP 2112.01 [R-3] I. In the instant case, the cold-rolled dual-phase steel sheet of Nakaoka et al. ('080) in view of Chatfield et al. ('218) is identical or substantially identical to that of the instant disclosure, therefore a prima facie case of obviousness exists. The same ferritic and martensitic structure would be expected in the steel sheet of Nakaoka et al. ('080) in view of Chatfield et al. ('218) as in the claimed steel strip.

The contents of C, Cr, Si, P, Al and N in the slab of Nakaoka et al. ('080) in view of Chatfield et al. ('218) overlap the claimed contents in the instant claim 1 respectively; the maximum content of Mn in the slab of Nakaoka et al. ('080) in view of Chatfield et al. ('218) is the same as the claimed minimum content of Mn in the instant claim 1; the coiling temperature range of Nakaoka et al. ('080) in view of Chatfield et al. ('218) is within the claimed range in the instant claim 1; the cold-rolling reduction ratio of Nakaoka et al. ('080) in view of Chatfield et al. ('218) is within the claimed ranges in the instant claims 1 and 5; the soaking temperature range in the continuous annealing of

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Nakaoka et al. ('080) in view of Chatfield et al. ('218) overlaps the claimed ranges in the instant claims 1, 7 and 8; the over-aging temperature of 260°C of Nakaoka et al. ('080) in view of Chatfield et al. ('218) is close to the claimed tempering temperature of 250°C in the instant claim 1; the percentage of the low temperature transformation phase in the whole structure of Nakaoka et al. ('080) in view of Chatfield et al. ('218) also overlaps the claimed martensite percentage in the instant claim 1. The overlapping ranges establish a prima facie case of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the claimed ranges within the disclosed ranges of Nakaoka et al. ('080) in view of Chatfield et al. ('218) with expected success, because Nakaoka et al. ('080) in view of Chatfield et al. ('218) discloses the same utility over the entire disclosed ranges.

Response to Arguments

4. The applicant's arguments filed on November 24, 2010 have been fully considered but they are not persuasive.

First, the applicant argues that Nakaoka et al. ('080) in view of Chatfield et al. ('218) does not teach the claimed Mn content; Nakaoka et al. ('080) discloses that the Lankford value (r) seriously decreases to below the target limit of 1.4 with a Mn content of over 0.25 wt %; the instant invention achieves high r values when higher Mn amounts are used; and such effect would have been unexpected to a person of ordinary skill in the art. In response, the examiner notes that Nakaoka et al. ('080) does disclose a Mn content by weight of 0.05-0.30% (col. 6, lines 19-26). The maximum content of Mn in the slab of Nakaoka et al. ('080) in view of Chatfield et al. ('218) is the same as the

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claimed minimum content of Mn in the instant claim 1. A prima facie case of obviousness exists. See MPEP 2144.05 I. Furthermore, Nakaoka et al. ('080) limits the Mn content to 0.25 wt % in order to ensure an yield strength of not beyond 30 kg/mm² and a r value of not below 1.4, suggesting that the Mn content can be higher than 0.25 wt % when higher yield strengths and lower r values are desired. It is also noted that there is no description of the effect of the Mn content on the r value and higher r values at high Mn contents in the instant disclosure (US Pub. 2006/0144482 A1). The instant invention limits the Mn content only to balance the yield strength and ductility (paragraph [0064]). The Fig.1 in the instant disclosure shows the relationship between the r value and the content of martensite. The target r value of the instant invention appears to be greater than 1.1 (paragraph [0049]), which is similar to the r value at 0.3 wt % of Mn as shown in the Fig. 1 of Nakaoka et al. ('080). Therefore, the instant invention does not disclose achieving high r values when higher Mn amounts are used as asserted by the applicant.

Second, the applicant argues that the C content disclosed by Chatfield et al. ('218) is higher than the claimed C range. In response, the examiner notes that the ground of rejection of the claimed C content relies on the teaching of Nakaoka et al. ('080) rather than that of Chatfield et al. ('218). It is noted that the applicant is arguing against the references individually, whereas, the obvious rejection relies on the combined teachings of Nakaoka et al. ('080) in view of Chatfield et al. ('218).

Conclusions

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5. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emily Le can be reached on 571-272-0903. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Weiping Zhu/
Examiner, Art Unit 1734

1/26/2011